In the Claims:

1.   (currently amended) An address resolution method for a virtual private network (VPN) comprising customer edge (CE) devices each having a provider edge (PE) interface, wherein one of the PE interfaces has a single layer 3 address in the VPN and supports a multiplex of layer 2 virtual circuits for communication with remote CE devices, the method comprising the steps of:

- sending an address resolution request message, including a layer 3 address of a remote CE device, through said PE interface over each layer 2 virtual circuit of the multiplex;

- in response to reception of [[an]] a message responding to said request message at said PE interface on one of the layer 2 virtual circuits, mapping the layer 3 address of said remote CE device to said one of the layer 2 virtual circuits.

2.   (original) A method as claimed in claim 1, wherein the VPN is provided through a shared network infrastructure to which the CE devices are connected by their respective PE interfaces.

3.   (original) A method as claimed in claim 2, wherein each layer 2 virtual circuit of said multiplex is provisioned in the shared network infrastructure for communication with a respective remote CE device of the VPN.

4.   (currently amended) A method as claimed in claim 1, wherein said PE device one of the PE interfaces having a single layer 3 address in the VPN and supporting a multiplex of layer 2 virtual circuits for communication with remote CE devices belongs to a CE device including a layer 3 router of the VPN.

5.   (original) A method as claimed in claim 1, wherein the layer 2 virtual circuits of said multiplex are distinguished by respective virtual local area network identifiers included in tagged data frames exchanged through said one of the PE interfaces.

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6.   (original) A method as claimed in claim 5, wherein the step of mapping the layer 3 address of said remote CE device to one of the layer 2 virtual circuits comprises memorizing a correspondence between said layer 3 address and the virtual local area network identifier of said one of the layer 2 virtual circuits.

7.   (original) A method as claimed in claim 1, wherein the response message includes the layer 3 address of said remote CE device.

8.   (original) A method as claimed in claim 1, wherein said one of the PE interfaces is an Ethernet interface.

9.   (original) A method as claimed in claim 8, wherein the address resolution request and response messages are messages of a standard Ethernet Address Resolution Protocol (ARP).

10.   (original) A method as claimed in claim 1, wherein the VPN has a hub-and-spoke topology, with said one of the PE interfaces at a hub site and said remote CE devices at spoke sites.

11.   (original) A customer edge (CE) device for a virtual private network (VPN), comprising:
   - a provider edge (PE) interface having a single layer 3 address in the VPN and supporting a multiplex of layer 2 virtual circuits;
   - means for transmitting, on each of the layer 2 virtual circuits of the PE interface, an address resolution request message including a layer 3 address of a remote CE device of the VPN; and
   - means responsive to reception of an address resolution response message on one of the layer 2 virtual circuits, for mapping the layer 3 address of said remote CE device to said one of the layer 2 virtual circuits.

12.   (currently amended) A device as claimed in 11, wherein said PE ~~device~~ interface is for connection to a shared network infrastructure in which

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each layer 2 virtual circuit of said multiplex is provisioned for communication with a respective remote CE device of the VPN.

13.   (original) A device as claimed in claim 11, further comprising a layer 3 router of the VPN.

14.   (original) A device as claimed in claim 11, wherein the layer 2 virtual circuits of said multiplex are distinguished by respective virtual local area network identifiers included in tagged data frames exchanged through said PE interface.

15.   (original) A device as claimed in claim 14, wherein the means for mapping the layer 3 address of a remote CE device to one of the layer 2 virtual circuits comprises means for storing a correspondence between said layer 3 address and the virtual local area network identifier of said one of the layer 2 virtual circuits.

16.   (original) A device as claimed in claim 11, wherein the response message includes the layer 3 address of said remote CE device.

17.   (original) A device as claimed in claim 11, wherein said PE interface is an Ethernet interface.

18.   (original) A device as claimed in claim 17, wherein the address resolution request and response messages are messages of a standard Ethernet Address Resolution Protocol (ARP).

19.   (original) A device as claimed in claim 11, disposed at a hub site of the VPN having a hub-and-spoke topology.

20.   (original) An address resolution method for a virtual private network (VPN) provided through a shared network infrastructure, the VPN comprising a plurality of customer edge (CE) devices each having a provider edge (PE) interface for connection to the shared network infrastructure, wherein a respective layer 3 address is allocated to each CE device of the VPN, wherein

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the CE devices of the VPN include a first CE device having a layer 3 router and a PE interface supporting a multiplex of layer 2 virtual circuits, wherein each of said layer 2 virtual circuits is distinguished by a respective virtual local area network identifier included in tagged data frames exchanged through said PE interface and is provisioned in the shared network infrastructure for communication with a respective remote CE device of the VPN, the method comprising the following steps:

- transmitting an address resolution request message from the first CE device on each of the layer 2 virtual circuits of the PE interface, the address resolution request message including the layer 3 address allocated to a second CE device of the VPN;

- in response to reception of said request message at the second CE device, returning an address resolution response message to the first CE device; and

- in response to reception of the response message at the first CE device, memorizing a correspondence between the layer 3 address allocated to the second CE device and the virtual local area network identifier of the layer 2 virtual circuit on which the response message is received.

21.   (original) A method as claimed in claim 20, wherein the address resolution response message includes the layer 3 address allocated to the second CE device, to be memorized in correspondence with the virtual local area network identifier of the layer 2 virtual circuit on which the response message is received at the first CE device.

22.   (original) A method as claimed in claim 20, wherein the PE interface is an Ethernet interface.

23.   (original) A method as claimed in claim 22, wherein the address resolution request and response messages are messages of a standard Ethernet Address Resolution Protocol (ARP).

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24.   (original) A method as claimed in claim 20, wherein the VPN has a hub-and-spoke topology, said first CE device being the hub and the other CE devices being spokes.

25.   (original) A customer edge (CE) device for a virtual private network (VPN) provided through a shared network infrastructure, comprising:

- a provider edge (PE) interface having a single layer 3 address in the VPN, for connection to the shared network infrastructure, said PE interface supporting a multiplex of layer 2 virtual circuits, wherein each of said layer 2 virtual circuits is distinguished by a respective virtual local area network identifier included in tagged data frames exchanged through said PE interface and is provisioned in the shared network infrastructure for communication with a respective remote CE device of the VPN;

- a layer 3 router for routing packets based on layer 3 addresses contained therein;

- means for transmitting an address resolution request message on each of the layer 2 virtual circuits of the PE interface, the address resolution request message including a layer 3 address allocated to one of the remote CE devices of the VPN; and

- means responsive to reception of an address resolution response message on the PE interface, for memorizing a correspondence between the layer 3 address allocated to said one of the remote CE devices and the virtual local area network identifier of the layer 2 virtual circuit on which the response message is received.

26.   (cancelled)

27.   (original) A device as claimed in claim 25, wherein the PE interface is an Ethernet interface.

28.   (original) A device as claimed in claim 27, wherein the address resolution request and response messages are messages of a standard Ethernet Address Resolution Protocol (ARP).

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